IT IS CLAIMED:

1. A set of electrophoretic tag (e-tag) probes for detecting each or any of a plurality of known, selected target nucleotide sequences, the set comprising j members, and each of said e-tag probes having the form:

(D, M_j) - N- T_j, where

(a) D is a detection group comprising a detectable label;

(b) T_j is an oligonucleotide target-binding moiety having a sequence of nucleotides U_i connected by intersubunit linkages $B_{i, i+1}$, where i includes all integers from 1 to n, and n is sufficient to allow the moiety to hybridize specifically with a target nucleotide sequence;

(c) N is a nucleotide joined to U_1 in T_j through a nuclease-cleavable bond;

(d) M_j is a mobility modifier having a charge/mass ratio that imparts a unique and known electrophoretic mobility to a corresponding e-tag reporter of the form (D, M_j) - N, within a selected range of electrophoretic mobilities with respect to other e-tag reporters of the same form in the probe set, where the e-tag reporter (D, M_j) - N does not itself contain nuclease-cleavable bonds;

(e) (D, M_j)- includes both D - M_j - and M_j - D -; and

(f) each of the target-binding moieties contains at least one modification selected from the following:

(i) at least one nuclease-resistant bond $B_{i, i+1}$, where i includes at least 1;

(ii) U_1 containing a capture ligand capable of binding specifically to a capture agent; and

(iii) a nuclease-resistant bond $B_{i, i+1}$, where i includes at least 1, and at least one nucleotide U_i containing a capture ligand capable of binding specifically to a capture agent, where $i \geq 1$.

2. The probe set of claim 1, wherein each probe has the form D - M_j - N- T_j and the corresponding e-tag reporter has the form D - M_j - N.

3. The probe set of claim 1, wherein each probe has the form M_j- D - N- T_j and the corresponding e-tag reporter has the form M_j - D - N.

4. The probe set of claim 1, wherein the N - U_1 linkage is a phosphodiester bond, and the nuclease-resistant bond(s) in the target-binding moiety is one or more linkages selected from the group consisting of thiophosphate, phosphinate, phosphoramidate, amide, and boronate linkages.

5. The probe set of claim 1, wherein the capture ligand is biotin.

6. The probe set of claim 1, wherein each M_j has a unique charge/mass ratio by virtue of variations in mass, but not charge.

7. The probe set of claim 1, wherein each M_j has a unique charge/mass ratio, by virtue of changes in both mass and charge.

8. The probe set of claim 7, containing at least 5 probes whose corresponding e-tag reporters have unique charge/mass ratios of between -0.001 and 0.5.

9. The probe set of claim 7, containing at least 9 probes whose corresponding e-tag reporters have unique charge/mass ratios of between -0.001 and 0.5.

10. The probe set of claim 7, wherein each M_j is formed of a selected number of negatively charged and/or positively charged amino acids.

11. The probe set of claim 7, wherein each M_j includes an alkyl chain, and differs from other M_j in the set by 1-3 methylene groups in the chain.

12. The probe set of claim 1, wherein the detectable label is selected from the group consisting of a fluorophore, a chromophore, and an electrochemical compound capable of a detectable reaction in the presence of a redox agent.

13. The probe set of claim 1, wherein the detectable label has a selected mass and charge.

14. The probe set of claim 13, containing subsets of probes, each subset having a label with a unique mass/charge ratio.

15. The probe set of claims 13 and 14, wherein the detectable label is a fluorophore.

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